

ABSTRACT

By adding silica to ceria-based CMP slurries the polish process starts much faster than without silica thereby eliminating dead time in the polish process and eliminating process instability caused by changes in the dead time with operating conditions. A slurry for performing chemical mechanical polishing (CMP) of patterned oxides (e.g., STI, PMD, ILD) on a substrate, comprises: ceria particles having a concentration of 1.0 – 5.0 wt% and silica particles having a concentration of 0.1 – 5.0 wt%. A ratio of ceria concentration to silica concentration (ceria:silica) is from approximately 10:1 to nearly 1:1 by weight. The ceria particles have a particle size of 150–250 nm, and the silica particles have a particle size of greater than 100 nm. The silica may be fumed or colloidal. The slurry has a pH of approximately 9.0.